Form BR 105 R
Rev 8/99

Bridge No. _____
Job No. _____
Replaces Bridge No. _____

Missouri Department of Transportation

Bridge Survey Report

Bridge over _____ Route _____
County _____ Sec. _____ Twp. _____ Rg. _____ ; _____ miles **NESW of _____
*On road from _____ to _____ at Sta. _____
West or North of site **East or South of site**

Give adjacent towns each way, not terminal points of route.* * Delete all but one of N-E-S-W or circle appropriate direction.*

Surveyed by _____ Date _____
Anticipated means of handling traffic _____

EXISTING BRIDGE AT OR NEAR PROPOSED SITE

Beginning Station _____ (ft) Ending Station _____ (ft)
Beginning Deck Elevation _____ (ft) Ending Deck Elevation _____ (ft)
Is entire flood discharge carried through this structure? _____ If not, profile must show entire waterway for extreme flood. Does drift pass satisfactorily? _____ Does the bridge back up water during flood? _____
Is there any indication of scour at piers and abutments? _____
Is this due to insufficient waterway or poor location of bridge? _____
Describe any protective work around piers or abutments (or show sketch of same on survey)

_____
Was this protective work placed subsequent to construction? _____

HIGH WATER ELEVATIONS AT PROPOSED BRIDGE SITE

If high water elevations are not available at proposed bridge site, give elevations where found and note location.

	Extreme High Water (Give date of occurrence)	Ordinary High Water (Give dates available)
Elevations and dates of same		
Location		
Source of information		
Head (or backwater from)		
Frequency (give dates)		
*** Character of drift		

****Light – passes 12 ft opening; Medium – passes 24 ft opening; Heavy – requires over 24 ft opening*

IMPROVEMENTS IN VICINITY OF PROPOSED BRIDGE

Note the location and type of any improvements in the vicinity of the proposed bridge, including residences, businesses, other buildings, crop fields, etc.

OTHER BRIDGES ACROSS SAME STREAM

This information required for bridges within 1000 ft of the proposed bridge except where this data for structures beyond this distance will obviously be of value. Include valley sections showing entire waterway for these bridges with survey. Sketches of structure not required.

	No. 1	No. 2
Distance from proposed structure, upstream or down (ft)		
Railroad or highway bridge. Year of construction		
Type (deck or thru truss, girder, etc.)		
Kind of substructure		
Number and length of spans		
Does this bridge carry the entire flood discharge?		
If not, state type and approximate area of additional waterway (ft^2)		
(roadway overflow, relief structure, etc.)		
Is there any indication of scour at piers or abutments?		
If yes, is this due to insufficient waterway or poor location of bridge?		
Is any protective work in place?		
Does the bridge back up water during floods?		
If yes, is this due to insufficient waterway?		
Is bridge well located with respect to stream and valley?		

Additional Remarks:

DATA FOR PROPOSED BRIDGE

By Bridge Division:

Drainage area above bridge site _____ (mi^2) Slope _____ (ft/mi) Elevation at basin divide _____ (ft)

Elev. at 85% of stream length upstream _____ (ft) Elev. At 10% of stream length upstream _____ (ft)

Map numbers _____ Length of valley _____ (mi)

By District Office:

Drainage area above bridge site _____ (mi^2) Slope _____ (ft/mi) Elevation at basin divide _____ (ft)

Elev. at 85% of stream length upstream _____ (ft) Elev. At 10% of stream length upstream _____ (ft)

Character of drainage area: (flat, rolling, hilly or mountainous) _____ Length of valley _____ (mi)

Is the stream reasonably straight or excessively crooked? _____

Is the channel at the site in good condition or badly obstructed; give brief description _____

Describe the character of the flood valley as to uniformity and obstructions

Describe the land use in each of the four quadrants near the bridge (pasture, crops, brush, developed, etc.)

Upstream Left _____ Upstream Right _____

Downstream Left _____ Downstream Right _____

Type of surface material of streambed (gravel, sand, silt, etc.) _____

Type of underlying material of streambed (gravel, sand, silt, etc.) _____

If obtainable and reliable, slope of the water surface during some particular high water stage. _____ (ft/ft)

Are the banks caving at the site? _____ Does the stream appear to be cutting or filling? _____

Are the deposits level with the general stream bed or do they form bars? _____

Elevation of extreme low water _____ (ft) During what months is stream dry? _____

Any sliding earth fills or slopes at bridge site? _____ Give details below:

Is there a dam having a definite spillway within a reasonable distance from the bridge site? _____

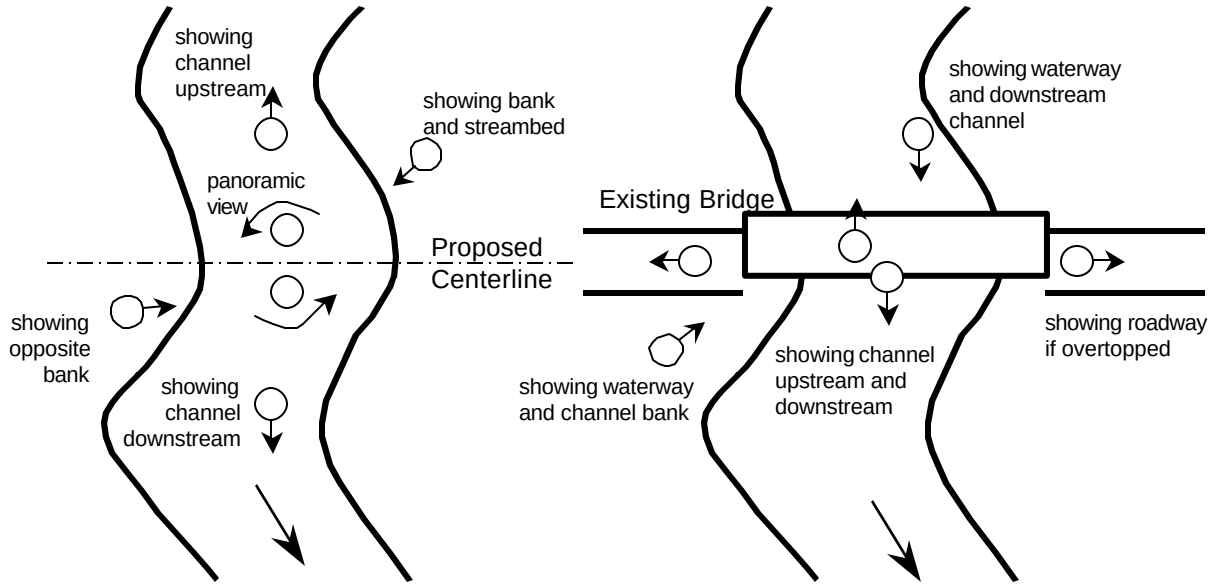
Does the spillway carry practically all the floodwater? _____ If so, give drainage area above same, approximate dates of construction, dimensions of spillway, location with respect to crossing and maximum head over spillway crest:

If crossing is over drainage ditch, provide the corporate name of drainage district:

PHOTOGRAPHS OF SITE CONDITIONS

Provide photographs documenting the site characteristics. Photos should be taken in an overlapping manner to provide a 360º panoramic view at or near the proposed stream crossing. Photos should also be taken to show the channel, banks and streambed both upstream and downstream of the proposed bridge, as well as the waterway through the existing bridge. If the existing roadway is overtopped at extreme high water, provide photographs showing the roadway on either side of the existing bridge. If the land use or stream characteristics are significantly different at upstream or downstream valley profiles, provide additional photographs to document these conditions. Additional photographs may also be necessary to provide information on other sire-specific conditions. It is especially important to show any nearby improvements that may be affected by flooding or changes in stream velocity.

Brief Description of Photographs (directions and locations):



GENERAL INSTRUCTIONS FOR BRIDGE SURVEYS

In order to provide the best possible structure design, it is important that this report be completed as fully and accurately as possible. Consultation with bridge office to resolve questions or issues that require considerable judgment is encouraged.

The purpose of a bridge survey is to provide data needed to establish three important points: the general dimensions of the structure (length, height, skew, and arrangement of spans); the type, size and depth of foundation; and the cost of construction. These three points are very intimately related to the required waterway. A restricted waterway means serious scour, and footings must extend deep or be very substantially founded.

There is no exact method of determining the proper waterway. Judgment must be based upon the following approximations: Comparison with existing bridges, determination of the capacity of the natural channel, and estimating the run-off from the drainage area. In order to utilize the first method, it is not sufficient to know merely the waterway provided by an existing bridge, but there must be knowledge as to whether that waterway is excessive or deficient, whether it carries all or a part of the flood waters, how the drainage area compares with that at the proposed site, and whether the stream bed offers equal resistance to scour at the different locations.

To compute the capacity of the natural channel, it is necessary to know the cross-sectional area and shape of the channel to the limits of high water on each side, the slope of the water surface at flood stage, and a factor known as the "coefficient of roughness" which depends upon the alignment and regularity of the channel and its freedom from obstructions.

An estimate based upon the run-off from the drainage presupposes that the reported drainage area is reasonably correct and not a guess. It is also necessary to know the general character of the country.

Preventing damage from scour is also a serious consideration in designing the structure. Additional information is required for prediction of scour potential, including information on stream characteristics such as whether the stream is straight or crooked, whether the banks and channel are stable, the type of material comprising the streambed and other such information.

Detailed instructions on completing the Bridge Survey Report and associated plan and profile sheets are contained in Chapters 3 and 5 of the *Project Development Manual*.